

REMARKS

Reconsideration of the above-referenced application is respectively requested in view of the above amendments and these remarks. Claims 1-33 are currently pending.

The Examiner notes that certain references submitted with the Information Disclosure Statement filed on May 9, 2003 have not been considered as the IDS apparently does comply with 37 C.F.R. § 1.98(a)(2). Applicant has submitted all foreign patent documents and non-patent literature along with this Amendment. If any fees are due for these references to be considered, Applicants hereby authorize payment by way of the deposit account as instructed below.

The Examiner also notes that the Specification fails to adequately describe all of the drawings submitted with the Application. Applicant has amended the specification to include an accurate description of Figures 4 and 5. No new matter is entered by way of this Amendment. It is therefore requested that the objection to the Specification be withdrawn.

In the Office Action, claims 1, 2, 4, 6-11, 16, 19, 20, 22 and 23 were rejected under 35 U.S.C. § 102(a) and (e) as being anticipated by Ramesh. Applicant has amended independent claims 1 and 10 to obviate this objection. Applicant has also amended claims 2, 4, 6-9, 16 and 19 to correspond to the amendments to claims 1 and 10. The present invention as seen in the amended claims 1 and 10 are directed to a method and apparatus for time-varying phase-shift transmit diversity in digital communications systems. In particular, the present invention is directed to a continuous, full 360 degree, phase change, i.e. the phase sweep, of the diversity channel relative to the main channel. The amended claims include a time-varying first phase-shift modulator and a second time-varying phase-shift modulator to create diverse phase-shifted signals that are sent from first and second antennae. In addition, the claims include a phase control signal that operates with the first and second phase-shifted modulated signals. Moreover, the present invention is directed to synchronization of the first and second phase-shifted modulated signals by a reference signal source. This method and apparatus produces a phase sweep transmit diversity (PSTD) where a high power modulator, working on the output signal

form one power amplifier produces a continuous phase-shifted diverse signal controlled by a phase lock circuit.

On the other hand, Ramesh discloses a method and apparatus for transmit diversity that uses pulsed signal inversion. In other words, Ramesh discloses multiplication of the diversity channel signal by -1 during predetermined periods of time to therefore induce forced fades in the receiver. Ramesh's preferred implementation method is a fixed phase shift of 180 degree during the specific inversion period. This is similar to the well-known bi-phase modulation, and not at all similar to the continuous phase sweep transmit diversity claimed for the present invention.

Ramesh describes an entirely different subsystem to attain transmit diversity than the present invention. Ramesh includes an inverter circuit that works on the low power section of the system. The inverter circuit operates in the diversity of arm of the circuit. This is the functional equivalent to the fixed value (180 degrees) low power phase shifter. Moreover, the Ramesh transmit diversity scheme requires at least two additional power amplifiers, one for the main arm and the other for the diversity arm of the transmitter.

Based on the foregoing, Ramesh discloses phase shift that is not time-varying but rather a step-function. On the other hand, the present invention as seen in amended independent claims 1 and 10 is directed to the first and second time-varying shifted signals. Thus, Ramesh does not anticipate amended claims 1 and 10. As claims 2, 4, 6-9, 11, 14, 16, 19-20, 22 and 23 depend upon amended independent claims 1 and 10 and include all the limitations of the base claims, they are also not anticipated by Ramesh. It is therefore respectfully submitted the claims 1, 2, 4, 6-11, 14, 16, 19-20, 22-23 are in condition for allowance and is respectfully requested that the rejection under Section 102(b) be withdrawn.

In the Office Action claims 3, 5, 12, 13, 15 and 21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ramesh. Claims 3 and 5 depend upon amended claim 1, and claims 12, 13, 15 and 21 depend upon amended claim 10. The Office Action states that Ramesh does not disclose the ascending or descending deviation in phase direction, but that Ramesh teach a realigning of phases and it would be obvious to one of ordinary skill in the art would be motivated to realign the phases by adding or subtracting angles with difference of up to 180 degrees.

Applicants have amended claims 1 and 10, upon which the rejected claims depend and the differences between the present invention and Ramesh are laid out above for the rejection under Section 102(b). Applicant respectfully contends that the inventions in claims 3, 5, 12, 13, 15 and 21 are not obvious in view of Ramesh for the reasons given above. In fact, because Ramesh discloses the use of multiplication of the diversity channel signal by -1 during predetermined periods of time to therefore induce forced fades in the receiver that the Ramesh teaches away of the time varying signals of the present invention. In view of the foregoing, Applicants respectfully submits that claims 3, 5, 12, 13, 15 and 21 are not obvious in view Ramesh. Applicants therefore respectfully requests that the rejection under Section 103(a) be withdrawn.

In the Office Action, Claim 17 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Ramesh and United States Patent No. 5,488,737 to Harbin. Applicant has amended independent claim 10 upon which claim 17 depends. The patentability over Ramesh is delineated above. Assuming *arguendo* that Harbin does teach adjusting of phases with a ferrite phase shifter, Harbin does not disclose, teach or otherwise suggest the time-varying shifted signals as a part of transmit diversity of the present invention. In view of the foregoing, Applicants respectfully submits that claim 17 is not obvious in view Ramesh and Harbin. Applicants therefore respectfully requests that the rejection under Section 103(a) be withdrawn.

Claim 18 is also rejected under 35 U.S.C. § 103(a) as being unpatentable over Ramesh and United States Patent No. 6,087,868 to Millar. Applicant has amended independent claim 10 upon which claim 18 depends. The patentability over Ramesh is delineated above. Assuming *arguendo* that Millar does teach a phase element in an open loop and closed loop linearization and compensation circuit, Millar does not disclose, teach or otherwise suggest the time-varying shifted signals as a part of transmit diversity of the present invention. In view of the foregoing, Applicants respectfully submits that claim 18 is not obvious in view Ramesh and Millar. Applicants therefore respectfully requests that the rejection under Section 103(a) be withdrawn.

Claims 24-33 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ramesh and United States Patent No. 5,748,669 to Yada. Applicants have amended independent claim 24 to obviate the rejection. Applicants have also made corresponding

amendments to claims 25-28, which depend up on claim 24. The amendments to claim 24 correspond to the amendments made to independent claims 1 and 10. The patentability of the present invention as described in claims 1 and 10 are given above and continue for this rejection of claim 24. Assuming *arguendo* that Yada does teach a control unit for a base station that has a processor, which operates according to programs stored in memory, Yada does not disclose, teach or otherwise suggest the time-varying shifted signals as a part of transmit diversity of the present invention. In view of the foregoing, Applicants respectfully submits that claim 24 is not obvious in view Ramesh and Millar. Applicants therefore respectfully requests that the rejection under Section 103(a) be withdrawn.

With respect to claims 25-33, the Office Action states that these claims are rejected for the reasons given for claims 2-9. As such, the arguments presented above for the corresponding claims are continued for claims 25-33. For claim 34, the Office Action states that Yada teaches a medium comprising one of paper, programmable gate array, application specific integrated circuit, erasable programmable read only memory, read only memory, random access memory, magnetic media and optical media. Assuming *arguendo* that this characterization of Yada is correct, Yada does not disclose, teach or otherwise suggest the time-varying shifted signals as a part of transmit diversity of the present invention. In view of the foregoing, Applicant respectfully submits that claims 25-34 are not obvious in view of the cited rejections. Applicants therefore respectfully request that the rejection under Section 103(a) be withdrawn.

As the Applicants have overcome all substantive rejections and objections given by the Examiner and have complied with all requests properly presented by the Examiner, the Applicants contend that this Amendment, with the above discussion, overcomes the Examiner's objections to and rejections of the pending claims. Therefore, the Applicants respectfully solicit allowance of the application. If the Examiner is of the opinion that any issues regarding the status of the claims remain after this response, the Examiner is invited to contact the undersigned representative to expedite resolution of the matter.

Serial No. 10/008,332
Shperling et al
Case No. CE08762R

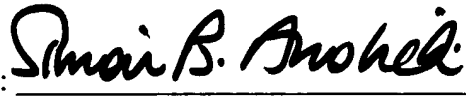
Please charge any fees associated herewith, including extension of time fees, to
50-2117.

Respectfully submitted,
Shperling, Itzhak et al.

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